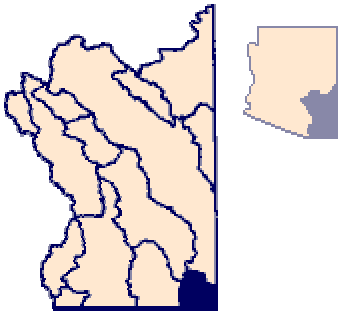
SAN BERNARDINO VALLEY BASIN



San Bernardino Valley basin is located in the extreme southeast corner of Arizona (Figure 17). The valley is bounded by the Pedregosa and Perilla Mountains on the west, the Guadalupe Mountains on the east, and the International Boundary to the south. Elevations range from 6,410 feet above mean sea level in the Pedregosa Mountains to 3,838 feet above mean sea level near the Boundary. Much of the valley floor within this basin is covered by volcanic flows and cinder cones with some parts covered by alluvium.

The total drainage area of San Bernardino Valley within the United States is 421 square miles. The U.S. Geological Survey estimated average annual surface water flow across the International Boundary to be approximately 5,000 acre-feet (Harshbarger and Associates, Inc., 1979).

Most of the groundwater in the San Bernardino Valley basin is obtained from thin units of sand and gravel interbedded with basalt flows or from shallow alluvium. Thick deposits of alluvium generally are not present.

The depth to groundwater varies greatly. Water levels measured between 1990 and 1992 near the International Boundary were less than 30 feet below land surface and up to 42 feet above land surface in the flowing wells. In this area, groundwater occurs under confined conditions in the lower part of the basin-fill (Longsworth, 1991). The depth to groundwater increases northward and toward the mountains where water levels exceed 700 feet below land surface (Schwab, 1992). The direction of groundwater flow generally is from the mountains toward the central part of the valley and then south toward the International Boundary and into Mexico.

No current data are available on the water-bearing characteristics of the alluvial aquifer. Few wells withdraw water from the alluvial aquifer. There is no major irrigation likely because of the lavas and pyroclastics that cover most of the basin floor. The main concentration of wells is immediately north of the International Boundary where the water level generally is less than 100 feet below land surface (Harshbarger and Associates, Inc., 1979).

Analyses of groundwater between 1986 and 1992 indicated that the total dissolved solids concentrations ranged from 180 to 1,080 milligrams per liter; fluoride concentrations ranged from 0.1 to 3.0 milligrams per liter (Schwab, 1992).